

have been shown by Schiff, Vulpian and Philipeaux to follow the section of the nerve supply, cannot be regarded as an analogous process and are not invariable.

Two views suggest themselves: Osteitis deformans may be due to

1. Infection by some organism, to the action of which bone tissue is especially liable; or,

2. To the default of some physiological principle which normally regulates and limits the growth of bone.

Either of these views may serve as a working hypothesis for investigations into the cause of the disease.

This affection has points of similarity with osteomalacia, leontiasis ossea, acromegaly, gigantism, arthritis deformans and rickets, but differs from them all in essential particulars.

No treatment has been of any service in arresting the progress of the disease.

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## IS SCIENTIFIC NATURALISM FATALISM?

A ONE-MINUTE PAPER.

BY WILLIAM KEITH BROOKS.

(*Read April 4, 1902.*)

Berkeley pointed out long ago that all the phenomena in nature may be expressed in terms of motion. The progress of science is teaching us this truth, and is thus bringing us to a point of view which Hume has indicated in these words: "The necessity of any action, either of body or of mind, is not in the object which exhibits the action, but in the spectator."

Scientific predictions are based upon our well-founded confidence that the order which we have discovered in nature in the past will continue in the future; but physical analysis neither answers nor asks why nature should be orderly, or what has made it so. For its purposes, the notions of agency and efficiency and causation are irrelevant and useless, because the notion of necessity is something that we ourselves project into nature and not anything that we find in nature.

If we agree with Hume, as I think we must, does not his statement carry with it, as its complement and counterpart, a declaration to this effect: Freedom in willing and doing, if there be such

freedom, is not in the spectator who considers the action, but in the agent?

Is our failure to find proof of freedom in our bodily machinery and its activity anything more than we should look for if freedom is not in the spectator, so far forth as he is merely a spectator and not a participant?

If the certainty of scientific predictions does not imply necessity, and if freedom in willing and doing is not in the spectator, are we not led to agree with Berkeley, that "certain and necessary are very different, there being nothing in the former notion which implies constraint, and which may not consist with a man's being accountable for his actions"?

If physical necessity is not in nature, but in the spectator; if freedom is not in the spectator, but in the agent; if the certainty of scientific predictions does not imply constraint;—does not the controversy about necessity and freedom come to an end for the man of science? Does science afford any ground for controversy?

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## A CLASSIFICATION OF ECONOMIES.

BY PROF. LINDLEY M. KEASBEY.

(*Read April 5, 1902.*)

Economics has to do with the weal relation between life and the environment. From life, on the one hand, emanates demand for well-being; from the environment, on the other hand, is derived the supply of useful things or goods that minister to well-being. In the last instance, therefore, the weal relation between life and the environment is a relation between demand and supply. Now, demand and supply are connected—made to meet, as economists say—by the utilization of natural resources. The object of this process is to derive from the outer world the qualities requisite to fulfill the demands of well-being, or, more precisely, to convert the potential utilities inherent in the environment into actual utilities. Thus, in its simplest sense, an economy may be defined as a system of activities whereby the potential utilities inherent in the environment are through utilization converted into actual utilities.

The very existence of life implies some such system of activities;